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ABSTRACT

As part of a year-long sociolinguistic study of pupil and teacher perceptions of classroom discourse, this study examined the possible effects of pupil status variables on pupil attention patterns. Subjects were 164 children and their teachers in six second, third, and fourth grade classrooms in a lower socioeconomic, multiethnic elementary school. To determine attention patterns, six teacher-planned language arts lessons were videotaped in each classroom over the course of the year. These lessons were played back in short segments on the same day to pupils who had participated in the lessons. Pupils were then individually asked at the end of each videotaped segment, "What did you hear anybody saying in that part of the lesson?" Each response was recorded verbatim on a 3 x 5 card, and the question, "What did you hear..." was repeated until the pupil could think of no more responses. A computer program was developed to compute mean ratios of attention for each pupil based on each of six pupil status variables. These variables were sex, ethnicity (Mexican-American, Anglo-American, Blacks, Asians, Portuguese, and Native Americans), entering reading achievement (as measured by the Metropolitan Achievement Test), status with peers (measured by a sociometric test), and teacher perceptions of pupils' communicative behavior in the classroom. In general, data demonstrated that for the pupils of this study there were identifiable attention patterns which appeared to relate to each of the status variables. (Author/MP)

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Who Hears Whom: Classroom Status Variables and Pupil Attention to the Comments of Other Pupils

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with Gary Galluzzo and Heather Tully

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This paper reports on a small sub-study conducted as part of a year-long sociolinguistic study of pupil and teacher perceptions of classroom discourse. The main study was designed to examine the general causes and effects of inadequate learning of the rules and processes of classroom discourse. Subjects were 164 children and their teachers in six second, third, and fourth grade classrooms in a single elementary school located in a lower socioeconomic, multi-ethnic, urban community at the southern end of the San Francisco Bay.

The major data collection procedure involved videotaping six teacher-planned language arts lessons in each classroom over the course of the year, and playing these lessons back in short segments on the same day to pupils who had participated in the lessons, asking them individually at the end of each videotaped segment, "What did you hear anybody saying in that part of the lesson?" Each response was recorded verbatim on a 3x5 card, and the question, "What did you hear...", was repeated until the pupil could think of no more responses.

Relevant Findings From Main Study.

One of the most interesting and surprising findings of the main study was that

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pupils reported hearing the comments, or answers, of other pupils significantly more often than they reported teachers' questions, or any other type of teacher comments (Morine-Dershimer, Tenenberg & Shuy, 1980). This was unexpected because so much has been written about how teacher talk dominates classroom interaction (e.g., Flanders, 1970), that many of us had begun to assume it must dominate pupil perceptions as well.

Another interesting early finding was that pupils of high status in the classroom peer group reported back more classroom discourse information (both actual language used and data on the social context in which the language occurred) than pupils of middle or low peer status, and this appeared to derive from the fact that they reported back more of the comments of other pupils (Tenenberg, Morine-Dershimer & Shuy, 1980). Fourth graders reported significantly more pupil responses than second or third graders. However, pupils high in entering reading achievement reported back more teacher questions than pupils low in entering reading.

We decided to pursue these findings by asking two general questions:

1) who are the pupils who are making the comments in class discussion; and

2) are particular types of pupil comments heard or reported proportionately more often than others.

In tracing patterns of participation in class discussions (Morine-Dershimer, Galluzzo & Fagal, 1980) we found that pupil sex, status with teacher, and entering reading achievement were all related to participation, but ethnicity and status in the classroom peer group were not. A regression analysis showed that sex contributed significantly to the explained variance in participation, while status with teacher and entering reading achievement jointly (but not independently) made a significant contribution to the explained variance. Boys participated more than girls, and pupils high in entering reading achievement and status with the teacher

participated more than pupils who were low on these classroom status measures. Furthermore, we found that participation in class discussion contributed significantly to the explained variance in final reading achievement, when entering reading was controlled for. Boys did not enter higher in reading than girls, but they participated in class discussions more, and were significantly higher in final reading achievement (entering reading controlled for). Mexican-American pupils entered significantly lower in reading than other pupils, but they participated equally in class discussions, and were not significantly lower in final reading achievement (entering reading controlled for).

Having identified the characteristics of the most frequent participators, and noted that pupil verbal participation in class discussions played an important role in final reading achievement, we turned to examine the types of pupil comments that seemed to attract the attention of other pupils. This was a somewhat more difficult task.

We found first that reporting of pupil comments was significantly related to the type of teacher question which preceded the response (Morine-Dershimer, Tenenberg & Shuy, 1980). Responses to lower convergent and higher divergent questions were reported most often (proportionate to their frequency of occurrence) while responses to rhetorical questions were reported least often. Further, we noted that reporting of pupil comments appeared to be related to the teacher reaction which followed the response. Pupil comments which drew teacher praise were reported more frequently than those which did not.

When pupil answers were analyzed as speech acts, however, we found no consistent patterns of reporting "participant replies" vs. "non-participant replies." That is, pupil comments which included personal opinion, feelings, attitudes, or experiences were reported no more or less often (proportionate to their occurrence)

than those which did not include any personal information (Morine-Dershimer, Ramirez, Shuy & Galluzzo, 1980). Thus, patterns of attention did not seem to stem directly from how "relevant to real-life experiences" the comments of other pupils were.

An analysis of the types of question cycles that occurred in lessons provided us with some additional information on pupils' reporting patterns. We found that pupil comments which were reported with high frequency (i.e., reported by more than 25% of the pupils listening and reporting) tended to occur in "conjunctive" and "embedded" cycles. A conjunctive cycle is one in which the teacher asks a question and then calls on several pupils in turn to respond to the same question. An embedded cycle is one in which the teacher asks a question, and then asks a probing or clarifying question in reaction to the pupil's response. In both instances, the teacher is "extending" the question cycle, or spending additional time in pursuing a particular question. We speculated that these types of extensions may suggest to pupils that the teacher considers these to be important questions, and pupils may therefore attend more carefully to the answers that occur in response (Morine-Dershimer, Ramirez, Shuy & Galluzzo, 1980).

In integrating these findings on pupil participation in and attention to classroom discourse with our findings on pupil definitions of the functions served by teacher questions, pupil responses, and teacher praise, we proposed the following interpretation of a "pupil's -eye view" of classroom questioning (Morine-Dershimer, Tenenberg & Shuy, 1980):

1) Teacher questions serve to identify the things that one <u>ought</u> to know;

2) The answers to questions serve to inform other pupils, so that if one pupil knows what ought to be known, soon all may know it;

3) Teacher praise serves to mark the pupil <u>responses</u> which are particularly "good" (most accurate, most informative), so that pupils should give special attention to those answers which are praised; and

4) Teacher "extension" of a question cycle serves to indicate that this is a particularly important question, so that pupils should give special attention to the responses it elicits.

Investigative Questions

All of this is by way of introduction to the sub-study being reported here. As a result of these findings we became intrigued with the possible effects of pupil status variables on pupil attention patterns. It was clear that pupil classroom status was related to patterns of participation in classroom discourse, that pupils were particularly alert to the comments of other pupils and also that pupils of differing status attended differentially to these comments (or at least, reported differently on what they heard being said). Therefore we asked:

1. Is pupil reporting of the comments of other pupils related to the classroom status of the pupil who is speaking;

2. Is pupil reporting of the comments of other pupils with particular status characteristics related to the classroom status of the pupil who is listening (reporting); and

3. If patterns of pupil attention are related to classroom status of speaker and listener are the patterns identified likely to be effective in helping pupils learn from the comments of other pupils.

This paper reports our results to date relative to these three questions.

PROCEDURES

Data Collection

The basic data collection procedures with regard to pupil reporting of classroom language have already been discussed. We will review briefly here the procedures for collecting data on pupils' classroom status and patterns of participation.

Videotapes of the lessons were used to produce transcripts of each class discussion, and seating charts provided by the teacher were used to identify the pupil who made each comment, wherever possible. These data were used to derive a

measure of frequency of participation in discussion over six lessons for each pupil, and within each classroom pupils were classified as high, middle, or low in frequency of participation, based on the overall patterns of participation in that class.

To gather information on pupil status in the peer group, each child (in January) was presented with an array of photographs of children in the class, given a series of scenarios, and asked to select the three children most likely and least likely to fit each scenario. The episodes involved selection of a team for a sports contest, selection of a team for a TV quiz show, identification of the children who would be likely (or unlikely) to take charge and know what to do if there were an accident in the classroom and no adults were around, and identification of the children who would probably be observed "hanging around" with the pupil if (s)he were followed for a week. Composite scores were developed for each pupil according to how frequently (s)he was mentioned under "most likely" and "least likely" categories, and within each classroom pupils were classified as high, middle, or low in peer status, on the basis of these composite scores.

Data on teacher perceptions of pupils' communicative behavior were collected by asking teachers to group children on the basis of several different language characteristics, which had been identified in earlier studies as salient features to teachers (Morine-Dershimer, 1979; Morine & Vallance, 1975). In September, October, and December teachers were presented with a set of 3x5 cards, each containing the name of a pupil in their classroom, and asked to sort, or group, the pupils according to: their participation in class discussions; their attentiveness during lessons; their tendency to follow the "no-talking" rules of the classroom; their use of "standard English;" and their probability of success in reading achievement for the year. Teachers' groupings of pupils in December, when the classroom was well established, were used to develop composite scores of their rating of pupils, and these were used as measures of pupil status with the teacher.

Within each classroom pupils were classified as high, middle, or low in status with the teacher on the basis of these composite scores.

Pupil "entering" reading achievement scores were based on the results of the Metropolitan Achievement Test which was routinely administered by all teachers in the school in October. Within each classroom these scores were organized by quartiles, based on the national test norms, since the state-funded reading improvement program in the school was evaluated on the basis of the number of pupils who moved up from below the first or second quartile in reading achievement during the course of the year.

"Final" reading achievement was measured by scores on the Metropolitan Achievement Test which was administered in the fall following our year of data collection. In examining the factors that might be related to final achievement, we have used regression analysis to control for entering reading achievement.

Data Analysis

The initial step in analysis of data for this sub-study was to take the instances of language reported by each pupil, locate where each instance occurred in the lesson transcript, and mark that "language event" with the identification number of the student who reported hearing it. Figure 1 presents a sample segment of a lesson transcript coded in this manner.

Next, a chart was developed for each class, showing the total number of identifiable comments made by each pupil in each of the six lessons, and the total number of these comments that were reported as heard by every other pupil in the class who viewed the videotape. (Each videotaped lesson was played back for only half of the class, and each pupil viewed three of the six videotaped lessons.) For each listener, based on this chart, it was possible to derive a measure of attention to the comments of every other pupil in the classroom. This measure was the number of comments (or partial comments) reported, divided by the number of comments actually made. For example, Jennifer made 9 comments in the three

FIGURE I

Sample Segment of Lesson Transcript Coded to Identify Language Events Reported as Heard by Individual Pupils

T: I put a few sentences up on the board this morning and/..Brandon, can you see them?/OK./ Would you read the very first sentence for us? /	160 153
Brandon: You will brush your teeth.	155, 154, 160, T
T: All right./ The next one,/ Karen?/	154
Karen T: You will put on your clothes.	165, 154
T: Arlene./	
Arlene: You will eat your breakfast.	165, 154
T: And the last one,/ Yvonne?/	
Yvonne: You will go to school.	T, 162,155,152,163,161,165,154,160
T: Now, I didn't put those in any specific order. I don't know if that's the way you do it or not. That's not the order that I do it. / How would you change the order to fit you?/ Which one would you do first, Arlene? /	159 158
Arlene: I would.....one, put on my clothes.	156, 158
T: I couldn't hear you./	
Arlene: Put on my clothes.	162, 155, T
T: Put on your clothes./Would you put your hand down, then I think we'll hear you when you talk. When it's up there it's blocking your way, It's hard to hear you./	157, T

lessons which were played back for Paul and Maria. Paul reported three of these comments, so his "ratio of attention" to Jennifer was .333. Maria reported six of Jennifer's comments, so her "ratio of attention" to Jennifer was .666.

A computer program was developed to compute mean ratios of attention for each individual pupil listener or reporter based on each of six pupil variables. Thus, for example, for Maria, who was female, Mexican-American, low in entering reading achievement, high in peer status, etc., we could obtain mean ratios of attention to the comments of all girls, all boys, all Mexican-American pupils, and all Anglo pupils in her classroom. For each individual pupil these mean ratios of attention, based on a given set of pupil status variables, such as sex or ethnicity, were ranked. These rankings were analyzed, using the Friedman two-way analysis of variance by ranks, to identify significant patterns of attention relative to the classroom status of pupil speakers and pupil listeners.

These statistics were computed over the full set of subjects for each of five classroom status variables (sex, ethnicity, peer status, status with teacher, entering reading achievement) and for pupil frequency of participation in class discussions. In addition, the data were analyzed separately by sub-groups within each variable set (e.g., for boys and girls separately with regard to sex). A further analysis was made broken down by grade level, to identify any differences in patterns of attention for third and fourth graders. (Our subjects included only one second grade, and pupils from this classroom were not included in the grade level analysis due to the confounding of classroom and grade level data.) Finally, some separate analyses were run by classroom to identify possible classroom differences in patterns of attention.

Because a number of statistics have been computed for the same set of data, which could lead to some significant findings on the basis of chance alone, we have used the more conservative alpha level of .01 in identifying significant results.

FINDINGS

Reading Achievement

Pupil patterns of attention to the comments of other pupils are related to classroom status variables of speaker and listener in some rather interesting ways for the subjects of this study. Table 1 presents summary data on attention patterns by entering reading achievement of speaker and listener. This is the pupil status variable which we might expect to be most "useful" in helping pupils learn from other pupils, if our supposition about pupil interpretations of the question cycle is correct. And indeed, we note that there is a significant overall difference in ratios of attention based on entering reading achievement of the speaker ($p < .01$), with comments of pupils who score above the third quartile being reported proportionately more often than all other speakers. This pattern is not significant for any subgroup of listeners except high achievers, but it is highly significant for them ($p < .001$). Thus we see that not only do pupils as a whole appear to have adopted the strategy of learning from other pupils comments by attending more carefully to the comments of high achievers, but it is also the case that the most academically successful pupils exhibit this strategy to the strongest degree.

Ethnicity

We turn next to examine data on a pupil status variable which we might not expect to be useful in helping pupils learn from other pupils. Table 2 presents summary data on attention patterns by ethnicity of speaker and listener. Contrary to our expectations, based on our proposed explanation of pupil interpretations of the question cycle, there is a significant overall difference in ratios of attention based on ethnicity of speaker ($p < .01$). The comments of Anglo pupils are reported proportionately more, while those of Mexican-American pupils are reported proportionately less. This pattern is not significant at the .01 level for any ethnic subgroups of listeners, though the mean proportions show that there is little differential attention exhibited by Mexican-American pupils, while the trend

TABLE I

Attention Patterns by Entering Reading Achievement
of Listener and Speaker
(mean proportions of comments reported as heard)

	Entering Reading Achievement of Speaker			
Entering Reading Achievement of Listener	Below 1st Quartile	Between 1st and 2nd Quartile	Between 2nd and 3rd Quartile	Above 3rd Quartile
Above 3rd Quartile (N=16)	.152**	.167**	.149**	.283**
Between 2nd and 3rd Quartile (N=32)	.175	.158	.201	.240
Between 1st and 2nd Quartile (N=47)	.205	.209	.218	.264
Below 1st Quartile (N=53)	.218	.179	.176	.229
Overall (N=148)	.197*	.182*	.192*	.248*

*x_r^2 = 13.156; df= 3; $p < .01$

**x_r^2 = 19.725; df=3; $p < .001$

TABLE 2

Attention Patterns by Ethnicity
of Listener and Speaker
(mean proportions of comments reported as heard)

Ethnicity of Listener	Ethnicity of Speaker: Anglo	Mexican-American	Other Minority
Anglo (N=57)	.223	.173	.181
Mexican-American (N=73)	.193	.191	.199
Other Minority (N=33)	.215	.156	.192
Overall (N=163)	.208*	.178*	.191*

*$x_r^2 = 10.817$; df = 2; $p < .01$

of differential attention is quite strong for "other minority" pupils. In fact, it approaches significance for this subgroup ($p < .05$). "Other minorities", in this case, included Blacks (11%), Asians, Portuguese, and a few Native Americans.

This pattern is of particular interest to us, for we have found few significant ethnic differences in the study as a whole. Mexican-American pupils were significantly lower in entering reading achievement, but there were no significant ethnic differences in peer status, status with teacher, participation in class discussions, final reading achievement (with entering reading controlled for), or in various measures of pupil perceptions of classroom language, such as: "information load" (amount of information reported back); definitions of the functions of questions, responses, or teacher praise; and explication of the "rules" of classroom discourse (who talks when to whom for what purpose). The ethnic differences in ratios of attention may thus reveal a very subtle type of pupil discrimination which has remained hidden from all of our previous analyses.

An alternative, or possibly additional, explanation for this pattern is the relationship between ethnicity and entering reading achievement. The distribution of Anglo, Mexican-American and other minority pupils by entering reading is presented in Table 3. We can readily see that anyone following a strategy of attending particularly to the comments of high achieving pupils would necessarily attend more to the comments of Anglo pupils than Mexican-American or other minority pupils.

It is also the case that the only two classrooms which showed significant differences in attention ratios based on entering reading achievement of the speaker, also were the only two classrooms to show significant differences in attention ratios based on ethnicity of the speaker (see Table 4). This lends support for the alternative explanation that differential attention to comments of Anglo and Mexican-American pupils may be the indirect result of a listening strategy which involves disproportional attention to the comments of high achievers. However, further studies with pupil populations where entering reading achievement

TABLE 3

Distribution of Subjects According to Ethnic Background and Entering Reading Achievement

	Anglo	Mexican-American	Other Minority
Above 3rd Quartile	13	1	2
Between 2nd and 3rd Quartile	9	14	10
Between 1st and 2nd Quartile	18	21	10
Below 1st Quartile	14	34	8

TABLE 4

Attention Patterns for Classrooms C and E by Entering Reading Achievement and Ethnicity of Speaker (mean proportions of comments reported as heard)

READING ACHIEVEMENT

	Below 1st Quartile	Between 1st and 2nd Quartile	Between 2nd and 3rd Quartile	Above 3rd Quartile
Classroom C (N=27)	.154**	.185**	.138**	.360**
Classroom F (N=24)	.201(**)	.186(**)	.256(**)	.307(**)

** $x_r^2 = 19.52$; df = 3; $p < .001$

(**) $x_r^2 = 17.75$; df = 3; $p < .001$

ETHNICITY

	Anglo	Mexican-American	Other Minority
Classroom C (N=28)	.216**	.135**	.210**
Classroom F (N=27)	.250*	.170*	.193*

** $x_r^2 = 17.354$; df = 2; $p < .001$

* $x_r^2 = 10.685$; df = 2; $p < .01$

is more evenly distributed across ethnic groups will be necessary if we are to obtain a more complete understanding of the reasons behind this particular pattern.

Frequency of Participation in Class Discussions

To continue our attempts to ferret out evidence that pupils may exhibit attention strategies which help them to learn from other pupils, we turn next to examine attention patterns based on frequency of participation of the speaker and listener in class discussions (see Table 5). Since we know that high participators tend to be pupils who are high in entering reading achievement and high in status with the teacher, and that high participation is related to high final achievement in reading (with entering reading controlled for), we might expect that a useful attention strategy for learning from other pupils would be to attend disproportionately to the comments of pupils who are high participators.

Our expectations are realized to some degree, for there is a significant overall difference in ratios of attention based on the speakers' frequency of participation in class discussions ($p < .01$). Furthermore, there is a significant difference in these ratios of attention for the subgroups of listeners who are themselves frequent participants in class disucssions ($p < .01$), but not for other subgroups. In both cases, frequent participants are attended to more than pupils who are "average", or fall in the middle range of frequency of participation. Thus, pupils in general appear to be following a potentially useful strategy of attending more to the comments of frequent participants, who tend to be the most "successful" pupils, and this strategy is followed most strongly by those more successful pupils, that is, the frequent participants themselves.

We hasten to note, however, that the attention strategy being followed in this case appears to have a strange twist, for pupils in general, and listeners who are frequent participants in particular, seem to be reporting the comments of pupils who are low in frequency of participation in almost the same proportions as the

TABLE 5

Attention Patterns by Listeners' and Speakers' Frequency of Participation in Class Discussion (mean proportions of comments reported as heard)

Listeners' Frequency of Participation	Speakers' Frequency of Participation		
	Low	Middle	High
High (N=53)	.197 (*)	.171 (*)	.216 (*)
Middle (N=54)	.213	.182	.205
Low (N=54)	.208	.161	.190
Overall (N=161)	.206*	.171*	.204*

*$x_r^2 = 12.813$; df = 2; $p < .01$

(*)$x_r^2 = 10.871$; df = 2; $p < .01$

comments of pupils who are high in frequency of participation. This would not seem to be a sensible strategy for learning from other pupils, for the low participators tend to be pupils who are low in entering reading achievement and status with the teacher.

In Table 6 we examine patterns of participation and achievement in a bit more detail. We note first that the group of participants who are most apt to be lower achievers in reading are those pupils who are in the middle range of frequency of participation (76% of the "middle" participators fall below the second quartile in entering reading). It is this group of middle participators whose comments are least attended to. Perhaps this is not such a strange strategy after all.

We note further that there is a special subgroup of girls who are low in frequency of participation but high in entering reading achievement. Perhaps an effective strategy of learning by attending to the comments of other pupils could involve disproportionate attention to the comments of some pupils who are high achievers, but infrequent participators. Such pupils would most probably be girls.

Sex

We turn next, therefore, to an examination of attention patterns by sex of speaker and listener. Under ordinary circumstances we would not expect sex of the speaker to be a useful guide in identifying the comments of pupils which might contribute to the learning of other pupils. There were no sex differences for these subjects in entering reading achievement, in status with teacher, or in peer status. We find in Table 7, however, that while there are no significant overall differences in ratios of attention based on sex of speaker, that girls as a subgroup do exhibit significant differences in their ratios of attention to the comments of other girls compared to their ratios of attention to the comments of boys ($p < .01$).

We must question how this pattern of attention could possibly be interpreted by pupils (girls) as an effective pattern for learning from class discussions. The possiblity that comes most quickly to mind is that when high achieving girls who are infrequent participants in class discussions do make a comment it may be

TABLE 6

Patterns of Participation in Class Discussions
By Sex and Entering Reading Achievement

Frequency of Participation	MALE		FEMALE	
	Below 2nd Quartile	Above 2nd Quartile	Below 2nd Quartile	Above 2nd Quartile
High	15	12	14	11
Middle	21	8	16	4
Low	14	3	25	12

TABLE 7

Attention Patterns by Sex
of Listener and Speaker
(mean proportions of comments reported as heard)

Sex of Listener	Sex of Speaker: Female	Sex of Speaker: Male
Female (N=85)	.208*	.178*
Male (N=78)	.200	.212
Overall (N=163)	.204	.194

*$x_r^2 = 9.044$; df = 1; $p < .01$

carefully attended to, and reported, at least by other girls. Frequent reporting of the comments of pupils who comment infrequently would yield high ratios of attention in our method of analysis. Certainly the possiblity that such an attending strategy is being followed by some pupils is worth further investigation.

Peer Status and
Status with Teacher

There are two final classroom status variables to be examined. These are peer status and status with teacher. If pupil attention to the comments of other pupils were simply a social phenomenon, we would expect the comments of pupils high in peer status to receive high ratios of attention. However, if the attention patterns are the results of pupil attempts to learn from the comments of other pupils, then we should not expect peer status to be a particularly strong factor. (Peer status is related to entering reading achievement and status with teacher, but it does not contribute significantly to the explained variance in either participation in class discussions or final reading achievement. See Morine-Dershimer, Galluzzo & Fagal, 1980, for further information on these relationships.)

Table 8 presents summary data on ratios of attention based on peer status of speaker and listener. There are no significant differences in ratios of attention overall, or for any subgroup of pupils. Thus, these data seem to fit what we might expect if pupil attention patterns were indeed the result of pupil attempts to learn from the comments of other pupils.

On the other hand, we might reasonably expect that if pupils are trying to learn from the comments of other pupils, then pupil attention patterns would be related to pupil status with teacher, for status with teacher is related to entering reading achievement, participation in class discussion, and final reading achievement (Morine-Dershimer, Galluzzo & Fagal, 1980). However, Table 9 indicates that the data on attention patterns based on pupil status with teacher do not meet these expectations. There are no significant differences here, either overall or for any

TABLE 8

Attention Patterns by Peer Status of Listener and Speaker (Mean proportions of comments reported as heard)

Peer Status of Listener	Peer Status of Speaker: Low	Middle	High
High (N=41)	.229	.223	.212
Middle (N=46)	.190	.219	.189
Low (N=45)	.237	.220	.173
Overall (N=132)	.218	.221	.191

TABLE 9

Attention Patterns by Listeners' and Speakers' Status with Teacher
(mean proportions of comments reported as heard)

Listeners' Status with Teacher	Speaker's Status with Teacher		
	Low	Middle	High
High (N=45)	.207	.192	.204
Middle (N=62)	.213	.200	.215
Low (N=52)	.196	.187	.179
Overall (N=159)	.206	.193	.200

subgroup of pupils. We might conjecture that pupils are unaware of other pupils' relative status with the teacher, but our data show that these pupils could "predict" pupil status with the teacher quite accurately (Tenenberg, Morine-Dershimer & Shuy, 1980.)

We must conclude, therefore, that if these pupils are attempting to use strategies of attending which will help them to learn from the comments of other pupils, they have not yet perfected these strategies, for they are failing to use one potentially effective guide, which is pupil status with the teacher.

Grade Level Differences

An examination of grade level differences in patterns of attention is very revealing with regard to the possible process of "perfecting" attending strategies. Table 10 presents summary data on ratios of attention by grade level for the three pupil variables that we have suggested might be most "useful" as guides in helping pupils learn from the comments of other pupils. In each case there is a significant difference in ratios of attention for fourth graders, but not for third graders. We note particularly that although pupils as a whole do not show significant differences in ratios of attention based on pupil status with teacher, fourth graders do exhibit a significant pattern. These data suggest that pupils may be learning or developing potentially useful attending strategies as they move through the primary grades, and that these may be fairly well developed, or perhaps even stabilized, by fourth grade.

We believe it is worth noting that for each of these three variables presented in Table 10, the significant differences in ratios of attention displayed by fourth graders involve disproportionately higher attention to "high status" speakers. In no case, however, are the lowest mean ratios of attention associated with the lowest status speakers. We might interpret this to mean that even fourth graders have not yet learned to play any of these potentially useful strategies "perfectly."

TABLE 10

Attention Patterns by Grade Level:
Potentially "Useful" Variables
(mean proportions of comments reported as heard)

READING ACHIEVEMENT

	Entering Reading Achievement of Speaker			
Grade Level of Listener	Below 1st Quartile	Between 1st and 2nd Quartile	Between 2nd and 3rd Quartile	Above 3rd Quartile
4th grade (N=47)	.200*	.183*	.241*	.294*
3rd grade (N=79)	.197	.191	.166	.246

$^{*}x_r^2 = 15.417$; df = 3; $p<.01$

FREQUENCY OF PARTICIPATION IN CLASS DISCUSSIONS

	Speakers' Frequency of Participation		
Grade Level of Listener	Low	Middle	High
4th grade (N=50)	.194*	.169*	.222*
3rd grade (N=83)	.213	.189	.188

$^{*}x_r^2 = 12.79$; df = 2; $p<.01$

STATUS WITH TEACHER

	Speakers' Status with Teacher		
Grade level of Listener	Low	Middle	High
4th grade (N=51)	.202**	.178**	.227**
3rd grade (N=81)	.207	.195	.189

$^{**}x_r^2 = 14.785$; df= 2; $p<.001$

An alternative interpretation is that none of these strategies would be perfectly effective in helping one learn from others, even if it were carried out in an exact fashion, for no single one of these status characteristics is perfectly correlated with academic success (e.g. final reading achievement). Thus, the most effective attending strategy might be some rough approximation of the patterns displayed here. For ourselves, we find it reassuring to note that the comments of pupils who are low on these measures of classroom status are not systematically ignored by other pupils.

To continue our analysis of possible developmental trends in patterns of attention to comments of other pupils, we turn next to examine summary data for the three status variables which we suggested might not be particularly useful in guiding pupils' attention. These data are presented in Table 11.

There are no significant differences in ratios of attention for either grade level for any of these variables. For sex and peer status, these grade level data are similar to the data for the full set of subjects. But overall data for ratios of attention based on ethnicity of speaker did show significant differences. We note that the mean ratios of attention by ethnicity do show stronger contrasts between Anglo and Mexican-American speakers for fourth graders than for third graders, and indeed the fourth grade ratios do approach significance ($p < .05$). Thus, there is some suggestion of a developmental trend here as well.

Pursuing the developmental question a bit further, we turn to Table 12, which presents grade level data on patterns of attention by sex of listener as well as sex of speaker. The reader will recall that for subjects as a whole girls showed significantly higher ratios of attention to other girls, while boys displayed no significant differences based on sex of speaker. The data in Table 12 show a developmental trend for female listeners. Third grade girls show no signigicant differences in ratios of attention by sex of speaker, but fourth grade girls do

TABLE 11

Attention Patterns by Grade Level:
"Non-Useful" Variables
(mean proportions of comments reported as heard)

ETHNICITY

Grade Level of Listener	Ethnicity of Speaker: Anglo	Mexican-American	Minority
4th grade (N=52)	.212	.169	.181
3rd grade (N=83)	.200	.181	.207

SEX

Grade Level of Listener	Sex of Speaker: Female	Male
4th grade (N=52)	.216	.186
3rd grade (N=83)	.198	.203

PEER STATUS

Grade Level of Listener	Peer Status of Speaker: Low	Middle	High
4th grade (N=39)	.239	.198	.207
3rd grade (N=71)	.201	.244	.178

TABLE 12

Grade Level Shifts
in Attention Patterns by Sex
of Speaker and Listener
(mean proportions of comments reported as heard)

FEMALE LISTENERS

Grade Level of listener	Sex of Speaker: Female	Male
4th grade (N=28)	.212**	.172**
3rd grade (N=41)	.200	.197

** $x_r^2 = 12.45$; df = 1; $p < .001$

MALE LISTENERS

Grade Level of Listener	Sex of Speaker: Female	Male
4th grade (N=24)	.211	.203
3rd grade (N=42)	.196	.209

($p < .001$). Even more interesting, perhaps, is the suggestion of a developmental trend for boys. Third grade boys show a tendency to attend disproportionately to the comments of other boys, and this approaches significance ($p < .05$). There are no significant differences for fourth grade boys, but this suggests that fourth grade boys are attending somewhat more carefully to the comments of girls than third grade boys are. Could it be that boys are simply slower than girls in developing this particular attending strategy? Clearly, this is another interesting question for further investigation.

Classroom Differences in Attention Patterns and Final Reading Achievement

If it is the case, as we have proposed, that the pupils in this study interpret the question cycle as an opportunity to learn from the comments of other pupils, and if it is the case, as the data presented here suggest, that pupils develop certain attending strategies which are potentially useful in helping them learn from the comments of other pupils, then we might expect that pupils who achieve more in school will display these potentially useful strategies to a greater degree than other pupils. We did find this to be the case for pupils who were high in entering reading achievement, as well as for pupils who were high in frequency of participation in class discussion. We can investigate this question further by comparing attention patterns in two classrooms that showed significant differences in pupils' final reading achievement (entering reading controlled for).

Comparative data on attention patterns in Classrooms E and F are presented in Tables 13 and 14. Classroom F is the higher achieving class. Table 13 presents ratios of attention by entering reading achievement and ethnicity. We present these data with a great deal of reservation. We have noted earlier the confounding of data on ethnicity and entering reading achievement for these subjects in general, and this is particularly true for Classroom F. Seven out of thirteen Anglo pupils

TABLE 13

Attention Patterns for Classrooms E and F
by Entering Reading Achievement and Ethnicity
(mean proportions of comments reported as heard)

READING ACHIEVEMENT

Classroom of Listener	Entering Reading Achievement of Speaker: Below 1st Quartile	Between 1st and 2nd Quartile	Between 2nd and 3rd Quartile	Above 3rd Quartile
Classroom E (N=23)	.199	.180	.227	.210
Classroom F (N=24)	.201**	.186**	.256**	.307**

** $x_r^2 = 17.75$; df = 3; $p < .001$

ETHNICITY

Classroom of Listener	Ethnicity of Speaker: Anglo	Mexican American	Other Minority
Classroom E (N=25)	.174	.166	.172
Classroom F (N=27)	.250*	.170*	.193*

* $x_r^2 = 10.685$; df = 2; $p < .01$

TABLE 14

Attention Patterns for Classrooms E and F
by Frequency of Participation and Status with Teacher
(mean proportions of comments reported as heard)

FREQUENCY OF PARTICIPATION IN CLASS DISCUSSIONS

Classroom of Listener	Speaker's Frequency of Participation: Low	Middle	High
Classroom E (N=24)	.174*	.135*	.201*
Classroom F (N=27)	.212	.198	.240

*$x_r^2 = 10.52$; df = 2; $p < .01$

STATUS WITH TEACHER

Classroom of Listener	Speakers's Status with Teacher: Low	Middle	High
Classroom E (N=24)	.158	.183	.216
Classroom F (N=26)	.243**	.172**	.238**

**$x_r^2 = 16.833$; df = 2; $p < .001$

score above the second quartile in entering reading, but none of the seven Mexican-American pupils do. Thus we see that a pattern of attending disproportionately to higher achievers in reading necessarily creates a pattern of attending disporportionately to Anglos. Or, conversely, a pattern of attending disproportionately to Anglos would necessarily create a pattern of attending disproportionately to higher achievers in reading. Both of these variables are associated with significant differences in ratios of attention for Classroom F, but unfortunately we cannot determine definitely which is the "real" strategy being followed by pupils.

For Classroom F, a different problem exists. Here there is only one pupil who scores above the third quartile in reading achievement. Thus, the ratios of attention for high achieving speakers all derive from the comments of one speaker. This pupil is an Anglo female who is of middle status in the peer group, high in status with the teacher, and high in frequency of participation in class discussions. Most of these characteristics would tend to lead to high ratios of attention, based on our overall findings, and we do not find a particularly high mean ratio of attention for this pupil, but even so, we prefer not to rely heavily on these data.

We present Table 13, then, as much to reveal some of the difficulties of identifying patterns of attention within a single classroom as to clarify possible differences between these two classrooms. With the data presented in Table 14, however, we are on somewhat safer ground, for the subjects within each class are fairly evenly distributed by frequency of participation in discussion and by status with teacher.

We have suggested that both frequency of participation in discussion and status with teacher are potentially useful guides for directing pupil attention to the comments of other pupils. We find in Table 14 that pupils in Classroom E appear to have adopted the first strategy, for they display significantly higher ratios of attention to pupils who are frequent participants ($p < .01$). Pupils in Classroom F, on the other hand, seem to have adopted a strategy of attending

disproportionately to comments of pupils who are either high or low in status with the teacher ($p < .001$). This is a rather difficult strategy to rationalize as a potentially effective one for learning from other pupils, for pupils low in status with the teacher are also apt to be low in entering reading achievement, low in frequency of participation, and low in final reading achievement. The data in Table 14, therefore, fail to provide us with any evidence that pupils in Classroom F are using more effective attending strategies than pupils in Classroom E, strategies which might contribute to their significantly higher final reading achievement.

We do note one interesting phenomenon about the data presented in Tables 13 and 14, however, and that is that for every comparative pair of mean ratios of attention except one, the mean ratio is higher for pupils in Classroom F than in Classroom E. A little further analysis reveals that for pupils in Classroom F the mean overall ratio of attention to the comments of other pupils is .224, while the mean overall ratio of attention for pupils in Classroom E is .170. The Mann-Whitney U test indicates that this difference is significant at the level of $p = .0188$ (one-tailed test). It would appear, then, that while our data do not clearly demonstrate the use of potentially more effective strategies of attending by pupils in Classroom F compared to pupils in Classroom E, there is <u>more overall attention</u> to the comments of other pupils.

We suggest that further investigation might well be directed toward studying larger numbers of classrooms which display significant differences in final achievement (entering achievement controlled for), to look for differences in overall ratios of attention to the comments of other pupils, as well as differences in the attending strategies that pupils might be using.

CONCLUSION

This investigation was initially triggered by our interest in the finding that

pupils reported hearing the comments of other pupils more than the comments or questions of the teacher. Our integration of a variety of findings about pupil perceptions of classroom discourse suggested that there might be a belief prevalent among pupils that they could (and should) learn from pupil responses to teacher questions. In our examination of the data presented here we have suggested that if this were indeed the case, effective strategies for attending differentially to other pupils might be based on classroom status characteristics which are related to academic success. Our data demonstrate that for the pupils in this study there are identifiable attention patterns which appear to relate to such status characteristics. Furthermore, there are identifiable grade level differences, such that these potentially effective attending strategies are displayed by fourth graders, but not by third graders. Finally, there are identifiable differences in the attention patterns of pupils in two classrooms which differ significantly in final reading achievement (entering reading controlled for), such that the overall ratios of attention to other pupils' comments are significantly higher in the higher achieving class.

The data presented here represent findings from only 164 pupils in six classrooms in a single elementary school, yet they provide important clues for understanding pupil attempts to process information in classroom lessons. The findings reported here have suggested a number of questions for further investigation. More importantly, perhaps, these findings suggest that further research along these lines has a strong potential for yielding answers that can contribute to improved classroom instruction.

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